

Kansas State Fire Marshal – Fire Prevention Division

References (s): 00-101/19.3.2.4, 99-99/8.2

Page 1 of 2



FIRE FACT 092 – OXYGEN USE

Federal Healthcare Oxygen Storage

It is common in healthcare facilities to utilize and store non-flammable medical gases which include compressed Oxygen, Helium, Nitrogen, and other non-combustible gases. The following guidelines are not intended to be all inclusive, but to serve as a general overview of the requirements.

Healthcare facilities are required to comply with NFPA 101, Life Safety Code (2000 Edition) which references NFPA 99, Standard for Healthcare Facilities (1999 Edition). NFPA 99 is where the majority of the use and storage requirements will be found.

Cylinder Storage less than 3,000 ft³

- Located in a room or space of noncombustible or limited-combustible construction
- Doors must be secured
- Cannot be stored with flammable gas, liquid, or vapor
- Separated from combustible materials: 20 ft – nonsprinklered
- Separated from combustible materials: 5 ft – sprinklered
- Space must be vented
- Separated from any source of heat
- Electrical fixtures located 5ft above the floor
- Freestanding cylinders shall be properly chained or in a cylinder stand or cart
- Valve protection caps shall be in-place and hand tightened
- Empty cylinders shall be marked to avoid confusion if a full cylinder is needed
- A sign, readable from a distance of 5 ft, shall be on the door:

CAUTION: OXIDIZING GAS(ES) STORED WITHIN: NO SMOKING

Cylinders in use

Up to 300 ft³ of nonflammable medical gas can be located outside of an enclosure at locations open to the corridor such as at a nurses station. However, the cylinders must be secured when not in immediate use. The total allowable amount is per smoke compartment and must include cylinders contained in “crash carts”.

Transfilling of liquid Oxygen

NFPA 99 requires that the transfer of gaseous oxygen from one cylinder to another shall be in accordance with CGA Pamphlet P-2.5, *Transfilling of High Pressure Gaseous Oxygen to Be Used for Respiration*. It is important to note that transfilling cannot occur in patient care areas. Transfilling must take place at a location specifically designated and marked.

- 1-hr fire-resistive construction; and
- Mechanically vented, sprinklered, and has concrete/ceramic tile; and
- Area has signs posted indicating transferring is occurring and no smoking

Kansas State Fire Marshal – Fire Prevention Division

Oxygen Concentrators

Used to provide oxygen therapy to patients, Oxygen concentrators pose several issues that must be avoided in order to keep patients safe. The most important thing to remember is that even though the patient may not be located in an oxygen tent (or other similar location), that the oxygen concentrator will still create an oxygen-enriched environment in the immediate vicinity of use.

NFPA 99, 8-2.1.2.1 states “In an oxygen-enriched atmosphere, materials that are combustible and flammable in air ignite more easily and burn more vigorously. Materials not normally considered to be combustible may be so in an oxygen-enriched atmosphere.”

In an oxygen-enriched atmosphere the following are and/or could pose an increased hazard:

- Beauty: hair oil, lotions, and hair dryers
- Clothing & linen
- Burning tobacco
- Radiant heaters
- Arching of electrical equipment
- Static electricity